

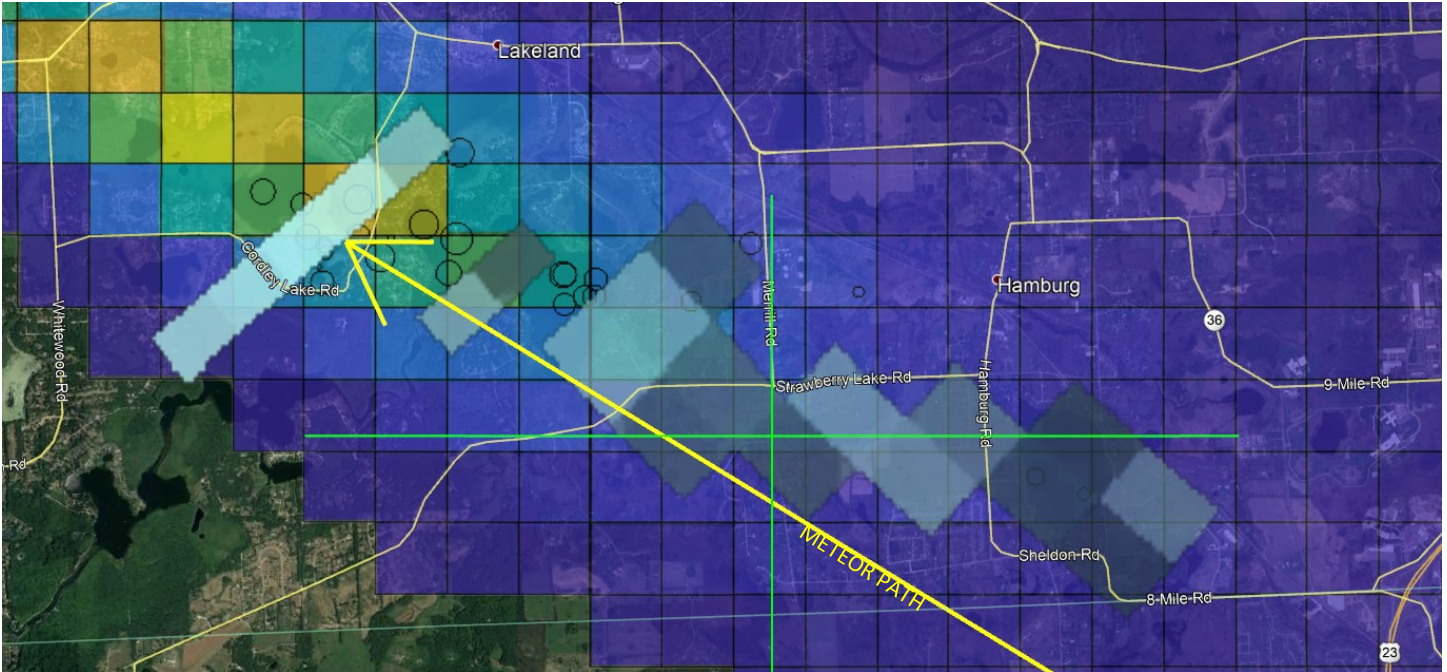


StrewnLAB Meteor Bulletin — Hamburg, Michigan, USA

Version 1.0 | Released January 16, 2020 4:00 UTC

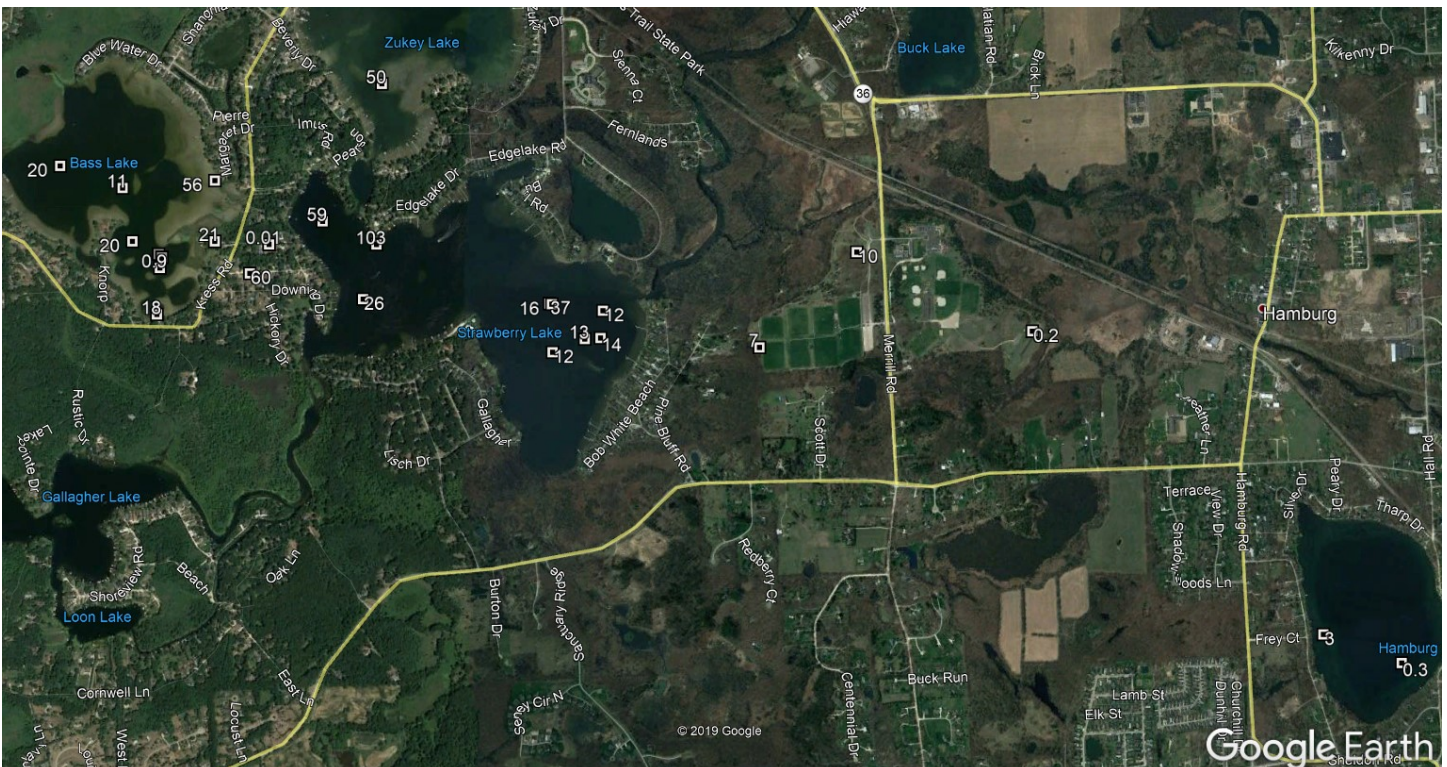
Doppler Data

As reported by Marc Fries, Doppler radar station KDTV, in White Lake, captured the meteorites at multiple levels as they fell. Doppler data is shown on the map below as gray rectangles. To better visualize the Doppler data, in 3 dimensions, please download the KMZ file labeled “3D”.



Meteorite Finds Map

The numbers on the map below are meteorite fragment masses, in grams.



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Meteorite Find Summary

Classification	H4 Chondrite
Main Mass	102.6g
Median Mass	12.6g
Approximate Strewn Field Area	8 km ²
Approximate Find Density	3.4 per km ²
Total Fragments Recovered	26
Total Mass Recovered	0.571 kg



Photo © 2018 Tony Licata, 16-gram Hamburg meteorite

All Known Finds

Data provided by Tony Licata. Finds are indicated on maps as black circles. Some masses may be estimated. The bulk density of two fragments was measured by the General Motors Astronomy Club.

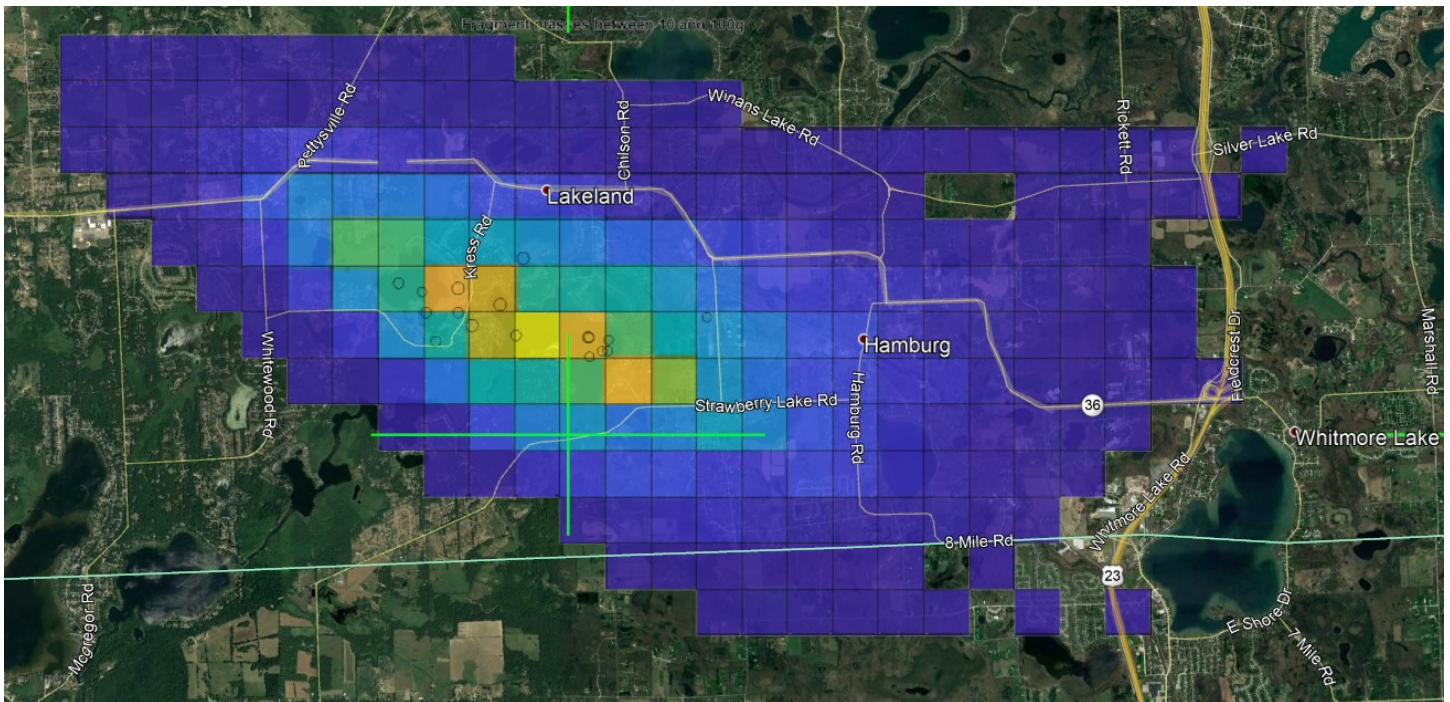
Find #	Find Date	Finder	Latitude	Longitude	Mass, g	Bulk Density, kg/m ³	Notes
1	18-Jan-18	T. Slisher	42.44860	-83.83584	12		Found on lake
2	18-Jan-18	Tony Licata	42.44885	-83.83850	15.843	3600.68	Found on lake
3	18-Jan-18	B. Wolfe	42.44904	-83.84833	26		Found on lake
4	20-Jan-18	A. Licata	42.45024	-83.85892	0.9		Multiple Specimens
5	20-Jan-18	B. Barnibo	42.43620	-83.79839	3		Found on lake
6	20-Jan-18	E. Licata	42.43510	-83.79432	0.301		Found on lake
7	27-Jan-18	Tony Licata	42.45084	-83.82264	10.43	3792.73	Found in wooded area
8	18-Jan-18	D. Landry	42.45415	-83.86411	20		AMS
9	19-Jan-18	G. Barger	42.45330	-83.86086	11		AMS
10	19-Jan-18	L. Janes	42.45126	-83.86035	20		AMS
11	26-Jan-18	R. Matthews	42.45077	-83.85898	2		AMS
12	26-Jan-18	L. Matthews	42.45065	-83.85881	1		AMS
13	18-Jan-18	La Atkins	42.44845	-83.85907	17.5		AMS
14	18-Jan-18	Resident	42.45003	-83.85422	60		Witnessed by B. Weller, found on land
15	18-Jan-18	B. Weller	42.45203	-83.85044	59.4		report from AMS
16	18-Jan-18	R. Ward	42.45114	-83.84764	102.6		Main Mass - Witnessed by B. Weller
17	18-Jan-18	Larry Atkins	42.44887	-83.83863	37		AMS
18	20-Jan-18	L. DeLanoy	42.44719	-83.82770	6.5		AMS
19	19-Jan-18	T.V.	42.44755	-83.83597	13.8		As per S. Hariri
20	19-Jan-18	T.V.	42.44751	-83.83679	12.6		As per S. Hariri
21	19-Jan-18	T.V.	42.44701	-83.83847	11.5		As per S. Hariri
22	22-Jan-18	D. Grischke	42.45359	-83.85605	55.92		AMS
23	27-Jan-18	Tony Licata	42.44781	-83.81352	0.2		Air Field
24	28-Jan-18	Tony Licata	42.45114	-83.85321	0.008		Ball Fields
25	20-Jan-18	A. Moritz	42.45652	-83.84736	51		Report 1,, found at 42.457302, -83.847359 Report 2, found at 42.4557917, -83.8466806
26	18-Jan-18	Unknown	42.45126	-83.85605	20.6		As per S. Hariri



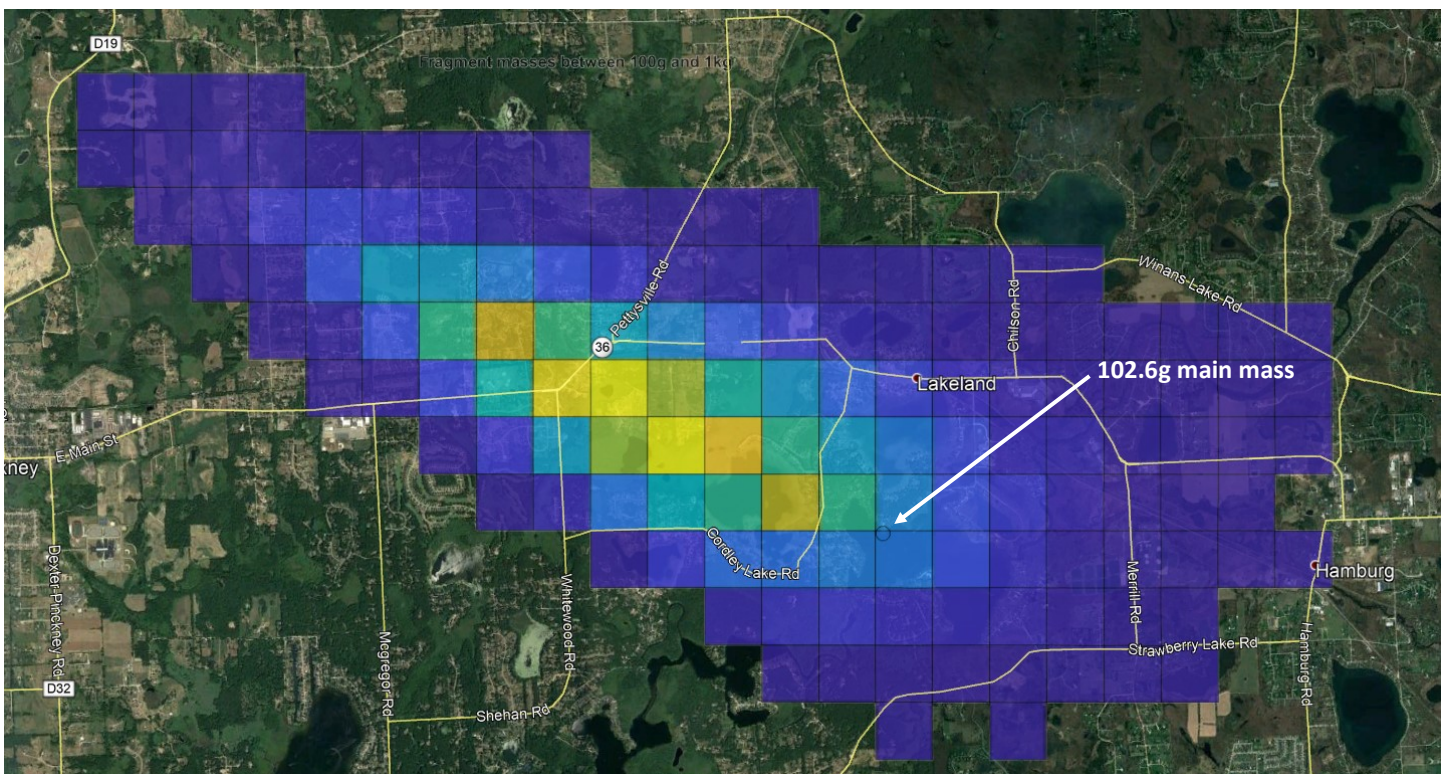
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10g to 100g Strewn Zone



100g to 1kg Strewn Zone



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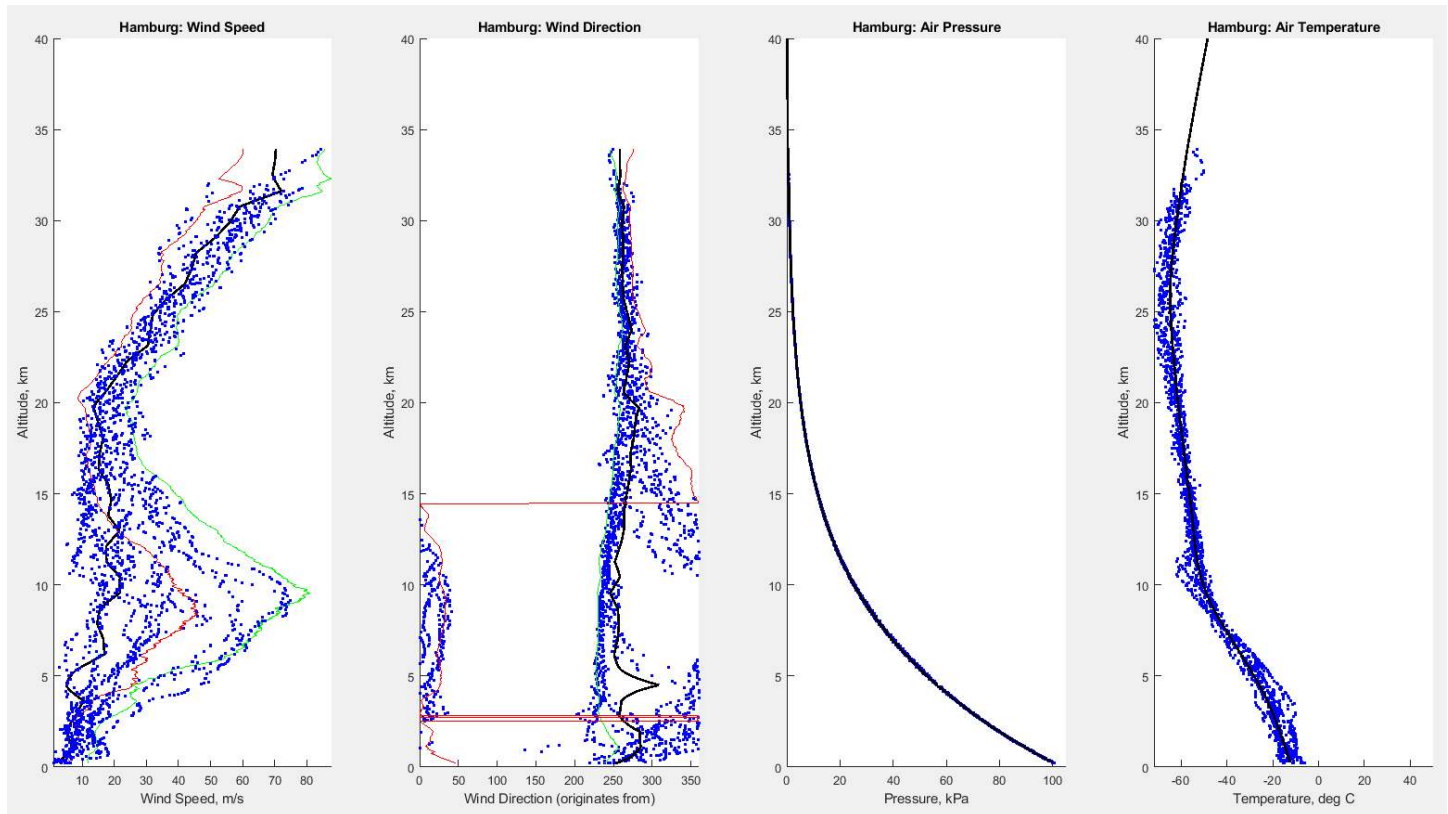


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Weather Data Summary

Windspeed variation included: -0.28σ to 0.72σ (calibrated to known finds)



Version Log:

Date	Version	Change Notes	Author(s)
01/09/2020	1.0	The simulation results presented here are based on the trajectory published by PeterBrown, et al. (2019). The results were accurate with no adjustment. But since the exact strewn field location is known from the find data, the wind speed variation was narrowed from the typical 1.5σ and calibrated to exactly match the known strewn field.	Jim Goodall

References:

AMS Event 168-2018. American Meteor Society. C2013-2019. https://www.amsmeteors.org/members/imo_view/meteorites/2018/168

Brown P. G. , Vida D., Moser, D. E., Granvik M., Koshak W. J., Chu D., Steckloff J., Licata A., Hariri S., Mason J., Mazur M., Cooke W., and Krzeminski Z. 2019. The Hamburg meteorite fall: Fireball trajectory, orbit, and dynamics. Meteoritics & Planetary Science 1—19.

Licata A. 2018. The Hamburg Meteor. Powerpoint Presentation.

Meteoritical Society Bulletin

IGRA Radiosonde Database. c2019. National Centers for Environment Information, National Oceanic and Atmospheric Administration. <https://www.ncdc.noaa.gov/data-access/weather-balloon/integrated-global-radiosonde-archive>.

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